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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,567	03/11/2004	Eddy B. Boskamp	GEMS8081.203	2566

27061 7590 08/26/2005

ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (GEMS)  
14135 NORTH CEDARBURG ROAD  
MEQUON, WI 53097

EXAMINER
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SHRIVASTAV, BRIJ B

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/708,567

Applicant(s)

BOSKAMP ET AL.

Examiner

Brij B. Shrivastav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weyers (US 6,608,480), and further in view of Doty (US 6,060,882).

As regards to claim 1, Weyers teaches an MR coil assembly, including a volume coil arrangement situated to generate a polarized field about a subject to be imaged, having multiple drive ports connected to a common end of the volume coil arrangement and with multiple drive cables connectable to a voltage source at one end and connected to the multiple drive ports at another end to apply voltages to the multiple drive ports such that the volume coil arrangement generates a substantially circular polarized field independent (figures 1, 2 and 4-6; column 3 and 4, lines 33-67 and 1-67). However, Weyers does not teach a volume coil arrangement generating a substantially circular polarized field independent of subject asymmetry. Doty teach a volume coil arrangement generating a substantially circular polarized field independent of subject asymmetry (column 9, lines 14-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt teaching of Doty to eliminate asymmetry in the electric

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field caused by the asymmetric sample/subject (and also due to the tuning circuits) with the teaching of Weyers avoiding signal complications to improve image quality.

As regards to claims 2-9, Weyers further teach limitation of each of these claims, wherein a birdcage coil with multiple cables and drive ports with center being not be a virtual ground, and having fewer drive cables than the ports, balun connected to the ports and the splitter connecting balun through a cable, ports having 90 degree phase difference or sixteen coil arrangement ( $n=4$  or  $n=16$ ) (figures 1, 3-6).

As regards to claims 10 and 19, Weyers teaches a magnetic resonance imaging apparatus and method having a magnetic resonance system with a plurality of gradient coils positioned about a bore of the system having a magnet to impress a polarizing magnetic field and an RF switch controlled by a transceiver system and an RF pulse module to transmit RF signals to an RF coil assembly acquiring MR data from a subject (column 1, lines 7-67), the RF coil assembly to acquire a plurality of RF coils arranged in a birdcage arrangement to transmit RF energy toward the subject at least partially positioned in a volume-of-interest, and a number of drive ports to receive an applied voltage to drive the plurality of RF coils and maintain a substantially circular polarized field about the volume-of-interest independent of subject contact with the RF coil assembly (figures 3-5; column 3 and 4, lines 33-67 and 1-67). However, Weyers does not teach a circularly polarized field about the volume of interest independent of subject contact with the RF coil assembly. Doty teaches a circularly polarized field about the volume of interest independent of subject contact with the RF coil assembly (column 9, lines 14-21).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt teaching of Doty to eliminate asymmetry in the electric field caused by the asymmetric sample/subject (and also due to the tuning circuits) with the teaching of Weyers to avoid signal complications to improve image quality.

As regard to claims 11-18 and 20-23, Weyers further teach limitation of each of these claims, wherein a birdcage coil with multiple cables and drive ports with center being not be a virtual ground, and having fewer drive cables than the ports, balun connected to the ports and the splitter connecting balun through a cable, ports having 90 degree phase difference or sixteen coil arrangement ( $n=4$  or  $n=16$ ) (figures 1, 3-6).

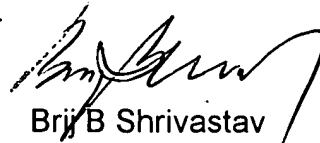
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brij B. Shrivastav whose telephone number is 571-272-2250. The examiner can normally be reached on 7 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. F. Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 22, 2005



Brij B Shrivastav  
Examiner  
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